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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,685	09/07/2000	Martin Pauly	99CR125/KE	2194

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Rockwell Collins Inc  
Intellectual Property Department  
400 Collins Road NE  
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Cedar Rapids, IA 52498

EXAMINER

NAHAR, QAMRUN

ART UNIT	PAPER NUMBER
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2124

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/656,685

Applicant(s)

PAULY, MARTIN

Examiner

Qamrun Nahar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 March 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,6,7,9,14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,7,9,14 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.                      6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to the preliminary amendment filed on March 26, 2001.
2. Claims 4-5, 8, 10-13, and 16-20 have been cancelled.
3. Claims 7, 9, and 14 have been amended.
4. Claims 1-3, 6-7, 9, and 14-15 are pending and have been examined.

### ***Drawings***

5. The drawings are objected to because Fig. 2 contains bulleted text, which is not necessary for the illustration of a statechart. Please remove the bulleted text. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to because Figs. 1 and 4 contains "Rockwell Collins" text, which is not necessary for the illustration of the present invention. Please remove the text. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

7. The disclosure is objected to because of the following informalities: "an a computer" on page 5, line 6 should be "on a computer".

Appropriate correction is required.

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8. The disclosure is objected to because of the following informalities: "to be an ordered" on page 5, line 5 should be "to be unordered".

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 depends on the cancelled claim 8. Claim 9 is interpreted as depending on claim

7.

***Claim Rejections - 35 USC § 101***

11. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

12. Claims 1-3, 7, and 9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

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13. As per claim 1, merely claimed as a program representing a computer listing *per se* (statechart), that is, descriptions or expressions of such a program and that is, descriptive material *per se*, non-functional descriptive material, and is not statutory because it is not a physical “thing” nor a statutory process, as there are not “acts” being performed. Such claimed programs do not define any structural and functional interrelationships between the program and other claimed aspects of the invention which permit the program’s functionality to be realized. Since a computer program is merely a set of instructions capable of being executed by a computer, the program itself is not a process, without the computer-readable medium needed to realize the program’s functionality. In contrast, a claimed computer-readable medium encoded with a program defines structural and functional interrelationships between the program and the medium which permit the program’s functionality to be realized, and is thus statutory.

**Warmerdam**, 33 F.3d at 1361, 31 USPQ2d at 1760. **In re Sarkar**, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978). See MPEP § 2106(IV)(B)(1)(a).

It is suggested that claim 1 be amended to recite the claimed statechart to be stored as computer executable on a computer readable medium.

As per claims 2-3, these claims do not further clarify the claimed subject matter, thus would render them as non-statutory statechart claims.

14. As per claim 7, merely claimed as a program representing a computer listing *per se* (modified Harel statechart formed on a computer), that is, descriptions or expressions of such a program and that is, descriptive material *per se*, non-functional descriptive material, and is not statutory because it is not a physical “thing” nor a statutory process, as there are not “acts” being

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performed. Such claimed programs do not define any structural and functional interrelationships between the program and other claimed aspects of the invention which permit the program's functionality to be realized. Since a computer program is merely a set of instructions capable of being executed by a computer, the program itself is not a process, without the computer-readable medium needed to realize the program's functionality. In contrast, a claimed computer-readable medium encoded with a program defines structural and functional interrelationships between the program and the medium which permit the program's functionality to be realized, and is thus statutory. **Warmerdam**, 33 F.3d at 1361, 31 USPQ2d at 1760. **In re Sarkar**, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978). See MPEP § 2106(IV)(B)(1)(a).

It is suggested that claim 7 be amended to recite the claimed modified Harel statechart to be stored as computer executable on a computer readable medium.

As per claim 9, the claim does not further clarify the claimed subject matter, thus would render it as non-statutory modified Harel statechart claim.

### ***Claim Rejections - 35 USC § 102***

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-3, 7, 9 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Marmelstein (U.S. 5,187,788).

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**Per Claim 14 (Amended):**

The Marmelstein patent discloses:

- **a method of providing avionic software** (“The Avionics Program Expert (APEX) is an automatic code generation tool for the Ada programming language ... It provides the programmer using APEX with the ability to quickly create a graphical representation of his initial program design ... Once the programmer has created his complete (or even partial) representation of a program, Ada code can then be generated with (from) APEX.” in abstract and column 2, lines 58-68 to column 3, lines 1-4)
  
- **providing a graphical representation of a state including a plurality of parallel states, the parallel states being ordered with respect to each other, the parallel states being ordered so that only one of the parallel states is active in response to a particular event** (“At the next block 1950, the initial state of the operation is then selected (order = 1; level = 1). The level of the state designates the level of nesting within the subprogram at which the state occurs. The order of the state designates the order within a give level of nesting at which the state occurs. A recursive routine represented as block 2000 (slide 6 of Fig. 20) is then called via block 2001 in order to assign an order/level to each state associated with the APEX operations object.” in column 13, lines 36-45 and Fig. 6, item 600)
  
- **applying the mathematical representation to an execution engine to create the avionics software** (“This recursive algorithm is an elegant way of ordering the states which make up an

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APEX operation ... The recursive operation causes the program to go via the block 2002 back to the start block 2001 for the slide 6 to process the next state. The algorithm concludes when all states have been assigned an order and a nesting level, and the exit is via line 2003 back to slide 5 of Fig. 19 into block 2100 ... The routine shown in Fig. 21, which corresponds to blocks 2100 and 2101 of Fig. 19, handles the actual generation of Ada code for the subprogram described by the APEX operation.” in column 13, lines 60-62 and column 14, lines 10-20).

**Per Claim 15:**

The Marmelstein patent discloses:

- **the avionics software is fully deterministic** (column 14, lines 58-68 to column 15, lines 1-33).

**Per Claims 1-3:**

These are statechart versions of the claimed method discussed above (claims 14 and 15), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above, including “statechart” (column 13, lines 36-45 and Fig. 6, item 600). Thus, accordingly, these claims are also anticipated by Marmelstein.

**Per Claims 7 & 9 (Amended, as best understood):**

These are modified Harel statechart versions of the claimed method discussed above (claims 14 and 15), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above, including “a modified Harel statechart formed on a computer”



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(column 13, lines 36-45 and Fig. 6, item 600). Thus, accordingly, these claims are also anticipated by Marmelstein.

***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marmelstein (U.S. 5,187,788) in view of Magor (U.S. 5,541,863).

**Per Claim 6:**

The rejection of claim 1 is incorporated, and further, Marmelstein does not explicitly teach that the avionic software is a graphical flight planner. Magor teaches that the avionic software is a graphical flight planner ("Flight Management System", column 4, lines 3-34; and Figs. 4 and 5).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the statechart disclosed by Marmelstein to include that the avionic software is a graphical flight planner using the teaching of Magor. The modification would be obvious because one of ordinary skill in the art would be motivated to ensure deterministic behavior for reactive systems such as a graphical flight planner.

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*Conclusion*

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

20. Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (703) 305-7699. The examiner can normally be reached on Mondays through Thursdays from 9:00 AM to 6:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki, can be reached on (703) 305-9662. The fax phone number for the organization where this application or processing is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

*Kakali Chaki*

QN  
March 5, 2003

**KAKALI CHAKI  
SUPERVISORY PATENT EXAMINER  
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